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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/995,328 | 11/27/2001 | Ralf Bertram | Mo-6855/HR-285 | 9683 |

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| EXAMINER |
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ZUCKER, PAUL A

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| ART UNIT | PAPER NUMBER |
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1621

DATE MAILED: 06/18/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/995,328

Applicant(s)

BERTRAM ET AL.

Examiner

Paul A. Zucker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: The title of the invention should be removed from the abstract page. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pelzer et al (US 5,585,091 12-1996).

Instantly claimed is a process for the synthesis of phenylene-bis-benzimidazole-tetrasulfonic acid disodium salt.

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Pelzer teaches (Column 17, lines 28-57) a process for the synthesis of phenylene-bis-benzimidazole-tetrasulfonic acid disodium salt in which o-phenylenediamine is reacted with terephthalic acid, chlorosulfonic acid and concentrated sulfuric acid.

Pelzer teaches that a product is obtained that is 99% pure contaminated only by 1% of the trisulfonic acid.

Pelzer further teaches reaction times of 30 minutes at 180 °C while the instant process claims reaction times of 10-15 hours. Pelzer is silent with regard to the extension of the reaction period.

It would, however, be obvious to one of ordinary skill in the art to modify the process of Pelzer by extending the reaction time to complete the sulfonation of the product that Pelzer teaches contains 1% of the product of incomplete sulfonation. The instantly claimed process is therefore obvious over the teaching of Pelzer.

3. Claims 1 -9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pelzer et al (US 5,585,091 12-1996) and further in view of Wang et al (Paper American Chemical Society, 220th, POLY-416, 03-2000) and further in view of Heywang et al (US 5,473,079 12-1995).

Instantly claimed is a process for the synthesis of phenylene-bis-benzimidazole-tetrasulfonic acid disodium salt and its subsequent purification.

Pelzer teaches (Column 17, lines 28-57) a process for the synthesis of phenylene-bis-benzimidazole-tetrasulfonic acid disodium salt in which o-phenylenediamine is reacted with terephthalic acid, chlorosulfonic acid and concentrated sulfuric acid. Pelzer further teaches (Column 17, lines 38-40) a solution of the product of the reaction in water at 80 °C and treatment with activated carbon with heating. The teaching of heating encompasses the instant claimed temperature ranges since a range above room temperature to less than boiling is assumed. The instantly claimed repetition of the treatment with activated charcoal is obvious over Pelzer's teaching of the first treatment since it would require only routine experimentation by one of ordinary skill in the art to determine whether the first treatment was incompletely successful in the removal of susceptible impurities. Pelzer additionally teaches (Column 17, lines 38-40) the formation of the sodium salt via treatment with sodium hydroxide solution. Pelzer further teaches (Column 17, lines 40-41) precipitation of the product by acidification with sulfuric acid. Pelzer also suggests (Column 15, line 24) the equivalence of sulfuric and phosphoric acids in his process (Cf. instant claim 9). Pelzer teaches that a product is obtained that is 99% pure contaminated only by 1% of the trisulfonic acid.

Pelzer further teaches reaction times of 30 minutes at 180 °C while the instant process claims reaction times of 10-15 hours. Pelzer is silent with regard to the extension of the reaction period.

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It would, however, be obvious to one of ordinary skill in the art to modify the process of Pelzer by extending the reaction time to complete the sulfonation of the product that Pelzer teaches contains 1% of the product of incomplete sulfonation. The instantly claimed process is therefore obvious over the teaching of Pelzer.

Pelzer is also silent with regard to the use of sodium chloride in the neutralization/precipitation step. The instantly claimed process claims the use of sodium chloride to precipitate the disodium salt. The Examiner notes that the open “comprising” language allows the use of sodium hydroxide as taught by Pelzer as well.

Wang, however, teaches (Abstract, lines 1-7) the sulfonation of aromatic compounds and generation of the corresponding sodium sulfonate salts via neutralization with a mixture of sodium chloride and sodium hydroxide.

Both Wang and Pelzer are silent with regard to acidification in the second step to pH 3 with hydrochloric acid as claimed in instant claim 8.

Heywang, however, teaches (Column 4, line 65 – column 5, line 32) a closely related process for the synthesis of 2-phenylbenzimidazole-5-sulfonic acid. Heywang further teaches (Column 4, line 65 – column 5, line 32) the acidification to pH 3 with hydrochloric acid to produce the final product.

Thus the instantly claimed process would have been obvious to one of ordinary skill in the art. The motivation would have been to create an improved process for the

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production of a commercially important sunscreen component. The instant process corresponds to the process of Pelzer modified to improve the recovery of the product sodium sulfonate salt as suggested by the teachings of Wang and Heywang. The expectation for success have been high because of the closely related chemistry shared by the references.

Conclusion

4. Claims 1-9 are outstanding. Claims 1-9 are rejected.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Zucker whose telephone number is 703-306-0512. The examiner can normally be reached on Monday-Friday 7:00-3:30.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 703-308-4532. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-4556 for regular communications and 703-308-4556 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1235.

Paul A. Zucker
Patent Examiner
Technology Center 1600

June 17, 2002



Johann Richter, Ph.D., Esq.
Supervisory Patent Examiner
Technology Center 1600

(for)

6/17/02